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ABSTRACT

Vocational training in general practice has been the focus of increasing attention in medical education in recent years. This paper makes a comparison between the attitudes of trained trainers, untrained trainers, and trainees in order to see what effects courses in general practice teaching might have on attitudes. Objectives in the frames of reference, general attitudes, or orientations that might enable trainers and trainees to work together with greater understanding are also explored. (Author/SPG)

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Vocational training in general practice has been the focus of increasing attention in medical education in recent years. In October 1972 a working party of the Royal College of General Practitioners published 'The Future General Practitioner - Learning and Teaching', which draws together much of the current literature and suggests guidelines for future development. But there has not been a great deal of work done on the design and evaluation of courses for trainers who do most of the actual teaching in general practice (but see Byrne, Freeman, and M'Comisky, 1970; Byrne, 1971; Morrison and Cameron-Jones, 1972). In fact there are very few courses at present in Britain so that when the Royal College of General Practitioners in conjunction with the British Postgraduate Medical Federation began their first course in November 1970 in which traditional methods of teaching were not considered the most appropriate, it was suggested that a research project should be set up. This would not only look at the general progress of the course but should develop methods of evaluation which would help such courses to monitor their activities and respond more effectively to the needs of the course members and general practice teaching.

In a previous paper, 'Attitudes of trainers and trainees to teaching in relation to the objectives of a course for teachers in general practice' (Cox and Kontiainen, 1973), a factor analysis of an attitude questionnaire resulted in five factors which were interpreted under the headings:

(1) approach to organizing trainee year;

(2) trainee's role;

(3) attitude to trainee's professional competence;

(4) personal relation between trainer and trainee, and

(5) trainer's teaching style.

These factors were related to the attitude objectives of a course for teachers in general practice and they were found to give a reasonably comprehensive picture of what the course was trying to achieve: a concern for structure, for the trainee's needs, and for involving him in planning (F1), encouragement of independence and avoidance of strict role prescription (F2), a trusting relation with low status difference (F3), valuing personal relations and trainee's personal development (F4), and a concern for developing varied and independent ways of learning (F5).

In this paper we shall be making comparisons between the attitudes of trained trainers, untrained trainers, and trainees in order to see what effects courses in general practice teaching might have on attitudes. At the same time we hope to clarify objectives of teaching in general practice and to explore possible differences in the frames of reference, general attitudes or orientations which might enable trainers and trainees to work together with greater understanding.

SUBJECTS

In the earlier factor analysis five groups were used:

'Group 1' Trained trainers, 1970-71 course, N=16

'Group 2' Trainers before training, 1971-72 course, N=16

'Group 3' Trained trainers, 1971-72 course, N=15

'Group 4' Untrained trainers, not associated with either course, N=34

'Group 5' Trainees, N=30

In this study we are interested in general differences between only three groups; trainers or prospective trainers who have attended courses for teachers in general practice, trainers who have not attended, and trainees. We have therefore combined groups 1 and 3 and dropped group 2 since they are the same individuals as in group 3 and should not belong to different groups using the statistical method we have chosen.

The new groups are:

'Group A' Trained trainers, N=31

'Group B' Untrained trainers, N=34

'Group C' Trainees, N=30

METHODS

In this study we shall only be considering the use of the questionnaire as a source of information about attitudes. This was described in some detail in the previous paper where the original 44 items (5-step scale) are given with the 30 selected for the factor analysis. The same 30 were used initially in this study as a basis for statistical analysis of differences between the three groups of subjects.

To study differences and similarities between the groups multiple discriminant analysis (cf. eg Cooley and Lohnes, 1971) was used as a statistical method. Multiple discriminant analysis takes into consideration both the group means and group dispersions of the original variables. It defines the latent variables of 'the test battery' which are the best separators among the groups in question. The discriminant functions are orthogonal (uncorrelated). The first function explains the greatest proportion of the discriminating information in the estimates of the variables studied and the following functions explain the remaining differences between the groups.

The interpretation of a particular discriminant function should consider both the loadings of the original variables in the function and their order. Discriminant analysis is sensitive to the formal properties of the original variables. The factor scores can be considered to fulfil the statistical conditions better than raw scores of the variables, but the analysis based on the raw scores can give more detailed information about the differences. The discriminant analysis based on factor scores, however, produced one function which accounted for 88% of the variance, and this led to difficulties in interpretation. We, therefore, dropped this form of analysis for the factors and discussed differences between the groups in terms of means scores on individual factors. The discriminant analysis was used here only for the original variables. A preliminary discriminant analysis enabled us to select from among the 30 variables only those where the differences between the three groups were statistically significant (F values at least 5% level), and seven variables were selected (see Table 1). Before the final discriminant analysis the MANOVA programme was used to test whether the conditions of equality of dispersions and overall discrimination for discriminant analysis were satisfied (Cooley and Lohnes, 1971). The equality of dispersion test (for H1) was marginal and the test for overall discrimination (for H2) was very significant so we considered that it made sense to continue with the discriminant analysis - Bartlett's χ^2 approximation ($0.01 > P > 0.05$) confirmed the H2 finding. Stepwise multiple discriminant analysis was used.

RESULTS

Difference between groups in terms of discriminant analysis

The multiple discriminant analysis resulted in two discriminant functions accounting for 100% of the discriminating information (the first function explains 58% and the second the remaining 42%). Table 1 gives the two functions for the three research groups, trained trainers, untrained trainers, and trainees in seven attitude variables. Table 2

gives group means of standardized d-scores (mean of the total sample is 0.00, standard deviation 1.00) in these two functions.

For interpretation the two functions are analysed separately. After the general interpretation of a function the attitudes of the three research groups are analysed and discussed in relation to the function in question. This is based on the table of means and standard deviations for the groups for individual variables set out in Appendix 1. Finally the results of the study are summarized in the Figure which gives the location of group centroids of the three groups in the space formed by the two discriminant functions.

Table 1 Variable-Discriminant correlations and canonical correlations for trained trainers, untrained trainers, and trainees in seven attitude variables

Variables[1]	Discriminant functions 1	2
Canonical correlation	0.57	0.51
1. Trainee has right to expect that proposed objectives of trainee year will be set out on paper	-0.46	-0.59
2. Most that realistic trainer can expect is that trainee will gain useful experience from his contact with patients and pick up helpful points from trainer	-0.33	(0.18)[2]
3. Precise role of general practitioner should be clearly laid down for trainee at beginning of his course	(0.25)	0.43
4. Trainer should not try to evaluate trainee's competence until course is over	(0.15)	0.42
5. Trainee should not expect to participate when sitting in on consultation	-0.54	(0.29)
6. Psychiatry is one of most important studies for trainee	-(0.16)	-0.51
7. Trainees are likely to underestimate element of social work in general practice.	0.52	-(0.01)

[1]Ratings by a 5-step scale (1= strongly agree; 5= strongly disagree with the statement in the variable).

[2]Parentheses indicate variables not included in our interpretation of the function.

Table 4 Description of attitudes of trained trainers, untrained trainers, and trainees to Role of Trainee (function 1)

Variable	Trained trainers	Untrained trainers	Trainees
5	Trainee active participation	Trainee active participation	Trainee less active participation
7	Patient-centred	Patient-centred	Slightly disease-centred
1	Organized programme	Less organized programme	Organized programme
2	Co-operative interaction	Co-operative interaction	Example and demonstration
Role of trainee:	Colleague-participant with organized programme	Colleague-participant with less organized programme	Student-observer with organized programme

The general expression of variables 5 and 1 is fairly straightforward. Variable 7 involves some interpretation but we feel it reasonable to associate attitude to social work with the general orientation to patients in the role of general practitioner. The main issues in variable 2 concern the degree of interaction between the trainer and trainee - and the kind of supervision expected. This variable and variable 5 are clearly related to the two poles of the function which we have called colleague-participant and student-observer. The other two variables are less clearly associated but the expectation that objectives will be set out on paper does fit a student-observer role better than colleague, and being disease-centred is more likely to be associated with the attitudes of students than colleagues.

In Table 4 we can see how the three groups can be characterized in terms of Function 1.

The untrained trainer group corresponds closely to the low d-score pole but the trained trainers differ in that they favour a more organized programme. The trainees are close to the high score pole except that they are not so passive in participation and are not very disease-centred; in general, though, they are more inclined to the role of student-observer than colleague.

Table 2 Discriminant function centroids for three research groups

Group	DFI	DFII
A (Trained trainers)	0.12	0.83
B (Untrained trainers)	-0.84	-0.32
C (Trainees)	0.82	-0.49

FUNCTION 1: ROLE OF TRAINEE; STUDENT-OBSERVER/COLLEAGUE-PARTICIPANT

The variables which have highest loadings in Function 1 are given in Table 3. The content of each variable is here expressed in general terms. The content of the two poles of the function are also given.

Function 1 appears to be concerned with the role of the trainee since variable 5 has the highest loading but it is not independent of the role of the trainer. How the trainer sees his own role determines how he sees the trainee's role and the same applies to the trainee, but it is easier here to look at the role relations from one point of view and we have chosen that of the trainee.

Table 3 Interpretation of function 1

Variable		High d-scores	Low d-scores
5	Trainee's participation in practice	Trainee passive participation	Trainee active participation
7	General practitioner role orientation	Disease-centred	Patient-centred
1	Organization of trainee year	More organized programme	Less organized programme
2	Type of supervision	Emphasis on example and demonstration	Emphasis on co-operative interaction
Summary interpretation	Role of trainee	Student-observer	Colleague-participant

On the function as a whole, Table 2 and the Figure show that the greatest difference is between untrained trainers and trainees. Trained trainers combine aspects of both. It is only the emphasis on an organized programme which makes them less colleague-participant oriented.We have, therefore, characterized them as having a colleague-participant view of the trainee's role despite being slightly on the 'student-observer' side of the axis.

FUNCTION 2: ORIENTATION TO TEACHING IN GENERAL PRACTICE; PROCESS-ORIENTED/PRODUCT-ORIENTED

Variables included in the interpretation of function 2 are given in Table 5. Here too the variables are expressed in general terms instead of writing the item as it stands in the questionnaire and in Table 1. The two poles of the dimension in function 2 are characterized by aspects of the four variables.

Function 2 is concerned with general orientation to teaching. This is particularly clear with programme organization (1) and evaluation (4), but variable 3 is related too in that it refers to the use of a precise definition of what the trainee year is aiming at. Variable 6 concerns the emphasis that should be given to one major aspect of general practice medicine which is itself closely related to the general orientation in teaching.

Table 5 Interpretation of function 2

Variable		High d-scores	Low d-scores
1	Organization of trainee year	More organized programme	Less organized programme
6	Psychological aspects in training	Emphasis on psychological aspects	Less emphasis on psychological aspects
3	Definition of role of general practitioner	No precise role definition	Precise role definition
4	Evaluation	Emphasis on continuing evaluation	Emphasis on final evaluation
Summary interpretation:	Orientation to teaching in general practice	Process-oriented	Product-oriented

Table 6 Orientation of trained trainers, untrained trainers, and trainees to teaching in general practice (function 2)

Variable	Trained trainers	Untrained trainers	Trainees
1	Organized programme for trainee year	Less organized programme for trainee year	Organized programme for trainee year
6	Psychological aspects in training very important	Psychological aspects quite important	Psychological aspects quite important
3	Not very precise general practitioner role definition	Not very precise general practitioner role definition	Slighlty more precise general practitioner role definition
4	Continuing evaluation	Less emphasis on continuing evaluation	Less emphasis on continuing evaluation
Orientation to teaching:	Process-oriented teaching	More product-oriented teaching	More product-oriented teaching

The high d-score pole is called process-oriented since the emphasis is more on what happens during the year - in organizing and monitoring the programme rather than defining and evaluating a clear-cut final product. The teacher is interested in objectives as a basis for analysing what is to be done rather than as a definition of the end-product. Of course, any teacher must be interested in what the 'product' should be, but different emphasis can be given to the value of the activities and learning experiences themselves. We should expect the process-oriented teacher to be more sceptical of his ability to measure all aspects of the'product' and the product-oriented (low score) teacher to see training more in terms of a formal time requirement.

The trained trainers correspond very closely to the high d-score or process oriented interpretation. The other groups are more product oriented but not in the same way, the untrained trainers placing less emphasis on an organized programme. For the function as a whole Table 2 and the Figure show the trainees to be most product-oriented but the greatest difference is between these two and the trained trainers.

SUMMARY OF DIFFERENCES BETWEEN GROUPS IN TERMS OF FUNCTION I AND II

The Figure gives the positions of the three group centroids in the space formed by the two functions. The untrained trainers lie quite clearly in the colleague-participant/product-oriented quadrant, the trained trainers are clearly process-oriented but not so clearly defined in terms of the other function. This was mentioned earlier. We believe this balanced position to be important and is discussed later.

DIFFERENCES BETWEEN GROUPS IN TERMS OF MEAN FACTOR SCORES IN RELATION TO THE TWO DISCRIMINANT FUNCTIONS

In the introduction we mentioned the titles of the factors based on 30 variables and described in a previous paper. Here we give an outline of the interpretations of these factors describing only the 'high score' pole.

Factor 1: Approach to organizing trainee year (high score pole)
Structured concern for planning, concern for trainee's needs, involving trainee in planning.

Factor 2: Trainee's role (high score pole)
Prescribed role in practice, formal, limited scope for independence, trainee less participation in practice.

Factor 3: Attitude to trainee's professional competence (high score pole)
Trusting, reliable, can work independently, professional status difference low.

Factor 4: Personal relation between trainer and trainee (high score pole)
Personal relation important, concern for development of personal style, low status difference.

Factor 5: Trainer's teaching style (high score pole)
Learning not mainly from observation of trainer, need for independent work and learning from experience, concern for trainee's general professional development, teaching not in conflict with smooth running of practice.

The main differences in terms of factor scores are between individuals but three of the factors show significant differences between group means. The actual mean scores with standard deviations are set out in Appendix 2; in Table 7 we summarize those and give t-test results (factor scores for the whole population have a mean of 0.0 and SD1.0).

Factor 1 shows the greatest differences between trainers and trainees. The trained trainers are quite similar to untrained but may show more concern for planning and involving the trainee in this. The trainees appear to show a lack of concern for planning but the interpretation from the trainees' point of view is difficult. The main issue seems to be their participation in planning. As student-observers in function 1 they wanted to have an organized programme but not to presume to participate as much as the trainers might wish. They may well be ambivalent about organization and their part in it and we get the impression that the situation is unclear for them. The trainees would not have a 'lack of concern for trainees' needs' but they do appear to be concerned about how far they can expect concern.

Factor 2 corresponds fairly closely to function 1. In both the biggest differences are between untrained trainers and trainees with trained trainers between the two. The difference between the untrained and trained trainers is concerned with role prescription and working with a formal programme, not independence and participation, but all aspects contribute to the difference between the trainees and the untrained trainers, suggesting distinct trainee role expectations.

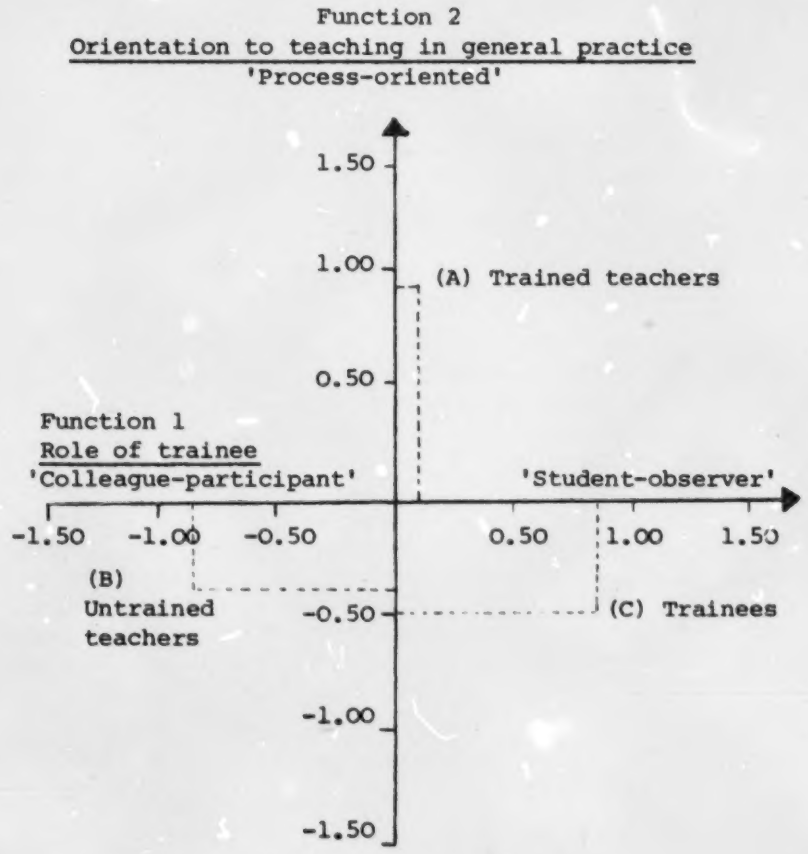

Fig. 12

Table 7 Differences between groups in terms of mean factor scores (t-test)

Factor	A Trained trainers	B Untrained trainers	C Trainees	Significance of differences A/B	B/C	A/C
1	High	Medium high	Low	NS	0.01	0.01
2	Neutral	Low	High	0.05	0.01	NS
3	Neutral	Medium low	High	NS	0.05	NS
4	Neutral	Medium high	Medium high	NS	NS	NS
5	Medium high	Neutral	Medium low	NS	NS	NS

Factor 3 shows that the trainees' acceptance of the student-observer role does not mean that they see themselves as unreliable and incapable of independent work. Their assumption that the trainer should prescribe their role and organize a formal programme does not mean that they feel there is a high status difference. They are not incapable of working independently but they are not sure about how far working independently as a trainee could be acceptable - knowing the trainer is ultimately responsible for all the patients? The untrained trainers are clearly ambivalent in relation to the trainees' independence. They want him to be a colleague-participant (functi 1 and factor 2) and yet they have the lowest score c factor 3 - they are not convinced that trainees can actually work as colleagues. The trained trainers appear to be less ambivalent seeing the trainees rather less as colleagues but being less suspicious too.

There are no significant differences in factors 4 and 5 between the groups and we might expect individuals to vary more here, especially in 4. What differences there are are in the right direction as far as assumptions about the effects of training are concerned and it is interesting that though the trainees are ambivalent about their role in the practice their 'student' status does not lead them to value the personal relations with the trainer less - the direction is the other way. (Perhaps it helps them to identify with the role of general practitioner).

The factor analysis results have drawn attention to similarities between the groups as well as differences, which are ignored in the discriminant analysis. Individual item means, however, show more similarities than differences and it may be worth a brief summary.

In general terms there is considerable agreement on the need for encouraging independence and a personal style of work,an understanding relation between trainer and trainee through getting to know the trainee's way of thinking and realizing the importance of the emotional side of the relation - but there is disagreement within all groups on how far this should involve questioning whether the trainee should become a general practitioner. The importance of attitudes towards patients is, not surprisingly, stressed in all groups and all agree that the trainee should gain experience in working with both neurotic patients and problem families. Defining objectives, group discussions with all staff of the practice, and appreciating the contribution the trainee can make are stressed by all, but there are individual variations on the role of research in the practice, how far lack of relevant medical knowledge is the main teaching problem, and how far defining objectives leads to rigidity. Work with the trainee in general should not interfere with the smooth running of the practice despite the importance of making time available for discussion with the trainee during surgery.

DISCUSSION

Since trainees have often chosen to learn to become a practitioner through the more dependent status of trainee rather than the more lucrative and independent status of locum or assistant, they might expect to 'be taught' rather than simply learn as a colleague. In other words they might see themselves as having a student role. Trainers, however, are primarily general practitioners, not teachers, and though they may feel they have much to offer they offer it as a colleague and not a teacher, so the trainee is seen as a colleague rather than a student. Trainers who have attended education courses, however, may see themselves as having a somewhat more prominent teacher role so that the tainees become student-colleagues.

The results of this study support such a view. They suggest that trained trainers have moved towards seeing their role as involving more active teaching (function 1) but have not become the 'medical school teachers' the trainees seem to expect - they want to involve the trainees in a planned programme of learning but through a colleague type of interaction rather than demonstrating and instructing.

The untrained trainers appear to want to make few concessions to the trainees' need to be taught. If the trainee works in the practice he will pick it up from ad-hoc co-operative interaction rather than through the organized programme which the trainee would like to see.

The trainees themselves are very diffident about taking an active part in the practice. Whether this is because of their experience of authoritarian medical school teaching or their fear of being exploited as an extra pair of hands we do not know, but it points to an important problem for the trainer to overcome. He needs to be sensitive to the processes of teaching - more inclined to analyse and evaluate the learning experiences which the trainee needs and it seems that the trained trainer is more willing to do this (function 2).

We cannot be sure, however, that the differences between trained and untrained trainers are not due more to selection rather than to the courses they have attended. We should be able to say more about this later in the study when we have a larger number of questionnaires completed by selected but untrained trainers, but at least this study has not shown - as it might have done - that courses have no effect (unless we believe that selection had a 'negative' effect and the course 'corrected' it). One of the objectives of the course for trainers mentioned in the introduction was to involve the trainees in planning their own programme. If they are involved then they should become much clearer about their own role. Planning will involve discussion of their needs and expectations. By encouraging independent activities, avoiding strict role prescription, establishing a more trusting relationship the trainer can encourage more active participation on the part of the trainee and yet enable him to feel more secure through a firmer sense of structure in his learning. Personal relations are clearly very important in the trainee year, but the crucial question concerns the balance between teacher role and colleague role. This defines the roles of trainer and trainee. Developing a personal relationship may have little emphasis where the orientation to teaching is very product oriented. But if this is so the trainee's personal development may remain obscure to both. A trainer may acquire the right knowledge and skills and even the 'right' attitudes and yet still not become a good practitioner if general practice does not provide basic satisfactions and the right sort of life style. A continuing discussion with the trainer about attitudes and the role of general practitioner could help the trainee to see his development less in terms of conforming to an ideal and more as part of the process of finding his own individual professional identity. This study suggests that trainees do need to develop a clearer idea of their role as a trainee and the kind of participation which is appropriate. The untrained trainers have difficulties in understanding their role as teacher, overemphasizing the colleague aspect while remaining suspicious of them as general practitioners. The trained trainers have achieved a better combination of teacher and colleague in the role of trainer and so are more willing to accept the role of trainee as both student and colleague.

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APPENDIX I

GROUP MEANS AND STANDARD DEVIATIONS FOR SEVEN VARIABLES INCLUDED IN ANALYSIS

	Trained trainers		Untrained trainers		Trainees	
Variable	Mean	SD	Mean	SD	Mean	SD
1	2.00	0.86	3.00	1.28	2.37	1.35
2	3.52	1.26	3.53	1.21	2.50	1.28
3	2.87	1.43	2.79	1.23	2.63	1.45
4	4.13	0.96	3.47	1.24	3.33	1.54
5	4.13	0.99	4.20	0.77	3.23	1.33
6	1.97	1.08	2.50	1.02	2.40	1.22
7	2.48	1.06	2.00	1.02	3.07	1.41

APPENDIX 2

GROUP MEANS AND STANDARD DEVIATIONS FOR SCORES ON FIVE FACTORS

	Trained trainers		Untrained trainers		Trainees	
Factor	Mean	SD	Mean	SD	Mean	SD
1	0.36	0.98	0.24	0.83	-0.52	0.84
2	0.07	0.78	-0.41	0.73	0.37	1.07
3	-0.01	0.85	-0.15	0.74	0.36	0.94
4	0.05	1.01	-0.15	0.71	0.12	0.90
5	0.20	0.67	-0.08	1.00	-0.10	0.90